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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,526	03/06/2002	Tomoka Morita	P22007	4567
7055	7590	09/21/2005	EXAMINER	
GREENBLUM & BERNSTEIN, P.L.C.			NGUYEN, JIMMY H	
1950 ROLAND CLARKE PLACE			ART UNIT	
RESTON, VA 20191			PAPER NUMBER	
			2673	

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/069,526

Applicant(s)

MORITA ET AL.

Examiner

Jimmy H. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 August 2005.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-39 is/are pending in the application.  
4a) Of the above claim(s) 24, 26-30, 33 and 35-39 is/are withdrawn from consideration.  
5) ☒ Claim(s) 1-21 is/are allowed.  
6) ☒ Claim(s) 22, 23, 25, 31, 32 and 34 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. This Office Action is made in response to applicant's RESPONSE TO ELECTION REQUIREMENT AND AMENDMENT, filed 08/01/2005.

2. Applicant's election with traverse of Species I in the reply filed on 08/01/2005 is acknowledged. The traversal is on the ground(s) that the Examiner has failed to specifically describe the unique special technical feature in each group to explain why each group lacks unity with each other group, as required. The Examiner agrees and explains as follows:

The claims are deemed to correspond to the species listed above in the following manner:

Claims 1, 2, 8, 9, 15, 16, 22, 23, 25, 31, 32 and 34 are readable on species I, as illustrated in fig. 2.

Claims 1, 3, 8, 10, 15, 17, 22-24 and 31-33 are readable on species II, as illustrated in fig. 9.

Claims 1, 4, 8, 11, 15, 18, 22, 23, 26, 27, 30-32, 35, 36 and 39 are readable on species III, as illustrated in fig. 11.

Claims 1, 5, 8, 12, 15, 19, 22, 23, 28, 31, 32 and 37 are readable on species IV, as illustrated in fig. 27.

Claims 1, 6, 8, 13, 15, 20, 22, 23, 29, 31, 32 and 38 are readable on species V, as illustrated in fig. 29.

Claims 1, 7, 8, 14, 15, 21-23, 29, 31 and 32 are readable on species VI, as illustrated in fig. 30.

The following claim(s) are generic: 1, 8, 15, 22 and 31.

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The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons: each species lacks at least one special feature of the other species, e.g., species I lacks the dither diffusion processing circuit of species II and species III, a lower diffusion circuit, a selection circuit, and a determiner of species VI, a selection circuit, a lower diffusion circuit, a dither circuit, and a determiner circuit of species V and VI.

Further, Applicants argue “Applicants further note that no restriction was set forth in International Application ... at least one International Examiner considered the issue of lack of unity and concluded that the claims are so linked as to form a single inventive concept”, see page 3, second paragraph, of the Response to Election. Examiner disagrees because the mentioned International Examiner may not recognize the lack of unity or may not even know what the lack of unity is.

Further, the Examiner agrees to withdraw the Election of Species if **applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case.** In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

The requirement is still deemed proper and is therefore made FINAL.

3. Applicants elect species I and indicate claims 1, 2, 8, 9, 15, 16, 22, 23, 25, 26, 31, 32, 34 and 35 readable on species I, as illustrated in fig. 2. However, the Examiner does not believe claims 26 and 35 readable on the elected species I because the original disclosure does not

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expressly teach the embodiment, which corresponds to species I, comprising first and second conversion means/steps of claims 26 and 35.

4. It is noted to Applicants that although claims 3-7, 10-14, and 17-21 are not readable on the elected species I, these claims are considered because these claims depend upon the allowable generic claim 1, 8 and 15. Accordingly, claims 1-23, 25, 31, 32 and 34 are considered.

5. Accordingly, claims 24, 26-30, 33 and 35-39 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected species II-VI, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 08/01/2005.

#### ***Information Disclosure Statement***

6. The information disclosure statement (IDS) submitted on 6/6/2002, 6/24/2002 and 2/2/2005 are considered by the examiner. It is noted Applicants that several references are crossed out because they are duplicated.

#### ***Drawings***

7. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the feature, "said N sub-fields SF1, SF2, ..., SFN have **small or equal** weights in this order" of claim 22 (see lines 9-10) and claim 31 (see lines 9-10), must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet,

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even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 22, 23, 25, 31, 32 and 34 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

As per claims above, these claims contain the feature, “said N sub-fields SF1, SF2, ..., SFN have **small or equal** weights in this order” (see lines 9-10 of claims 22 and 31), which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The

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disclosure, when filed, specifically figs. 4-8 and 12-26, expressly discloses sub-fields SF1, SF2, ..., SFN having weights of 1, 3, 6, 12, ..., in the order, (see figs. 4-8), i.e., sub-fields SF1, SF2, ..., SFN having **greater** weights in the order from SF1 to SFN. Furthermore, it would have been obvious to one skilled in the art to recognize that the subfield SF1 corresponds to a lower order bit and the subfield SF2 corresponds to a higher order bit, then how the subfield SF2 has smaller weight than that of the subfield SF1. Accordingly, these claims contain the above underlined feature which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

10. It is noted Applicants that due to the rejection under 35 USC 112, first paragraph above, the following art rejections are based as best understood by the Examiner.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. Claims 22 and 31 are rejected under 35 U.S.C. 102(e) as being anticipated by Shigeta et al. (USPN: 6,646,625 B1), hereinafter Shigeta.

As per claims above, the claimed invention reads on Shigeta as follows: Shigeta discloses a display device (see fig. 2) and an associate display method for providing a gray scale display by controlling in accordance with an input video signal individual pixels on a display panel so

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that each pixel emits light or does not emit light in individual N sub-fields SF1, SF2, . . . , SF8 that are defined by dividing one field and arranged on a time base in a prescribed order 1:6:16:24:35:46:57:70 (see fig. 4B), wherein a difference between the weight of the sub-field SF5 and the sum of the weights from the sub-field SF1 to the sub-field SF4 is 12 which exceeds the weight of the sub-field SF1 (see fig. 4B), and the gray scale of the video signal includes at least one non-display gray level (e.g., level 37, see column B of table in fig. 13) non-displayable by combining said N sub-fields between displayable gray levels (levels 36 and 42, see column B of table in fig. 13) by combining said N sub-fields, and wherein said display device comprises, conversion means for, when the gray scale of said input video signal is said non-display gray level (level 37, see column B of table in fig. 13), converting the gray scale of said input video signal into one of said display gray levels (level 36, see column B of table in fig. 13) that is close to said non-display gray level. Further, see figs. 2, 6 and 10, col. 11, lines 32-35. Accordingly, the elements and the steps in these claims are read in the Shigeta reference.

13. Claims 22 and 31 are rejected under 35 U.S.C. 102(e) as being anticipated by Tokunaga (USPN: 6,414,658 B1).

As per claims above, the claimed invention reads on Tokunaga as follows: Tokunaga discloses a display device (see fig. 2) and an associate display method for providing a gray scale display by controlling in accordance with an input video signal individual pixels on a display panel so that each pixel emits light or does not emit light in individual N sub-fields SF1, SF2, . . . , SF14 that are defined by dividing one field and arranged on a time base in a prescribed order 1:3:5:8:10:13:16: 19: ... :39 (see fig. 3), wherein a difference between the weight of the sub-field SF5 and the sum of the weights from the sub-field SF1 to the sub-field SF4 is 7 which exceeds



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the weight of the sub-field SF1 (see fig. 3), and the gray scale of the video signal includes at least one non-display gray level (e.g., level 2, see fig. 6) non-displayable by combining said N sub-fields between displayable gray levels (levels 1 and 4, see fig. 6) by combining said N sub-fields, and wherein said display device comprises, conversion means for, when the gray scale of said input video signal is said non-display gray level (level 2, see fig. 6), converting the gray scale of said input video signal into one of said display gray levels (level 1, see fig. 6) that is close to said non-display gray level. Accordingly, the elements and the steps in these claims are read in the Tokunaga reference.

*Allowable Subject Matter*

14. Claims 1-21 are allowed.

15. The following is a statement of reasons for the indication of allowable subject matter: the claimed invention is directed to a display device and an a display method for providing a gray scale display by controlling in accordance with an input video signal individual pixels on a display panel so that each pixel emits light or does not emit light in individual sub-fields that are defined by dividing one field and arranged on a time base in a prescribed order, said sub-fields being weighted to represent gray levels: wherein said plurality of sub-fields are weighted in such a way that at least one non-display gray level which cannot be displayed by combining said plurality of sub-fields is arranged between displayable gray levels by combining said plurality of sub-fields. Independent claims 1, 8 and 15 identify at least the uniquely distinct feature, “when said video signal represents said non-display gray level, diffusing temporally and/or spatially a difference between said non-display gray level and one of said display gray levels so that said non-display gray level can be equivalently displayed with said display gray levels”. The closest

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prior arts, Tokunaga and Shigeta as discussed above both disclose related display device comprising an error diffusing processing circuit (a circuit 330 as shown in fig. 18 of Tokunaga and a circuit 330 as shown in fig. 15 of Shigeta); a subfield corresponder (a second data conversion 34 as shown in fig. 11 of Tokunaga and a second data conversion 34 as shown in fig. 6 of Shigeta); and an emitting circuit (a circuit including elements 6-8 as shown in fig. 2 of Tokunaga and a circuit including elements 6-8 as shown in fig. 2 of Shigeta), either singularly or in combination, fail to anticipate or render the above underlined limitations obvious.

### ***Conclusion***

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy H. Nguyen whose telephone number is 571-272-7675.

The examiner can normally be reached on Monday - Thursday, 8:00 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached at 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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JHN

September 14, 2005

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A handwritten signature in black ink, appearing to read 'Jimmy H. Nguyen', with a stylized flourish extending to the right.

Jimmy H. Nguyen

Primary Examiner

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